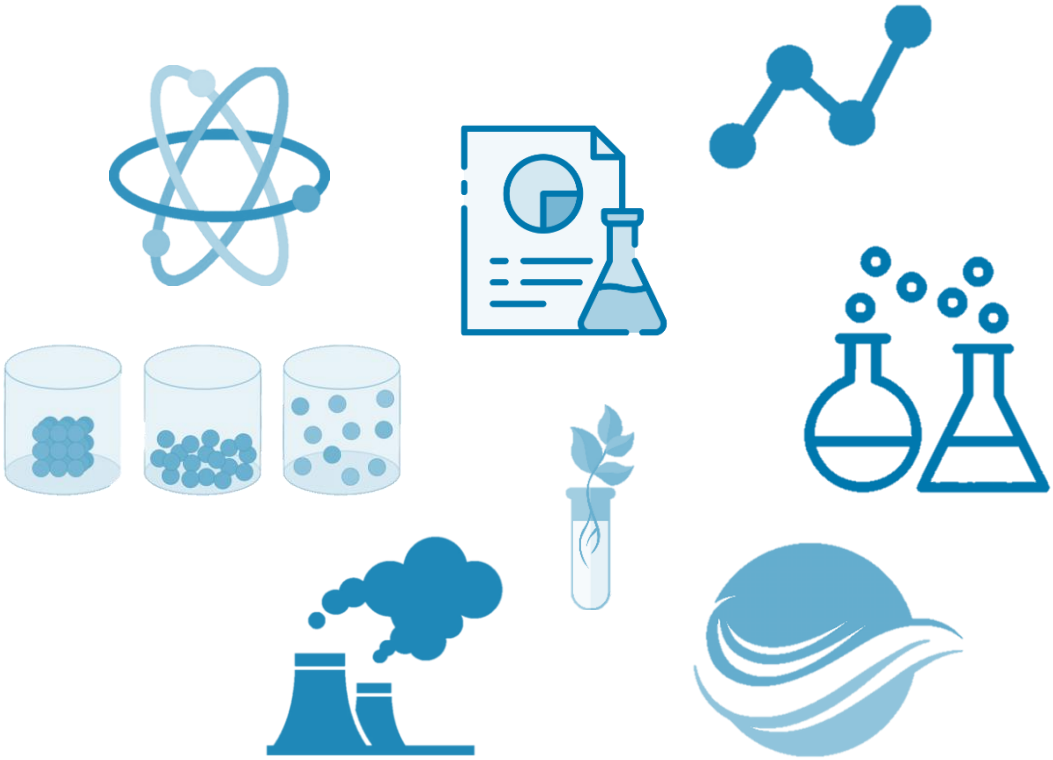
CHEMISTRY

KEY TERMS



CARDINAL NEWMAN CATHOLIC SCHOOL

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

COMBINED SCIENCE

Chemistry

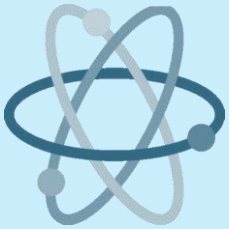
Paper 1 (1 hour 15 minutes)
19th May 2025 (AM)
C1: Atomic structure & the periodic table
C2: Bonding
C3: Quantitative Chemistry
C4: Chemical Changes
C5: Energy Changes

Paper 2 (1 hour 15 minutes)
13th June 2025 (AM)
C6: Rates of reaction
C7: Organic chemistry
C8: Chemical analysis
C9: Chemistry of the atmosphere
C10: Energy changes

SEPARATE SCIENCE

Chemistry

Paper 1 (1 hour 45 minutes)
19th May 2025 (AM)
C1: Atomic structure & the periodic table
C2: Bonding
C3: Quantitative Chemistry
C4: Chemical Changes
C5: Energy Changes
Paper 2 (1 hour 45 minutes)
13th June 2025 (AM)
C6: Rates of reaction
C7: Organic chemistry
C8: Chemical analysis
C9: Chemistry of the atmosphere
C10: Energy changes



DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

PAPER 1

TOPIC 1: ATOMIC STRUCTURE AND THE PERIOD TABLE

Alkali metals: The elements in Group 1 of the periodic table.

Atom: The smallest part of an element that can exist. All substances are made up of atoms.

Atomic nucleus: Positively charged object composed of protons and neutrons at the centre of every atom with one or more electrons orbiting it.

Atomic number: The number of protons in the nucleus.

Chromatography: A separation technique used to separate a mixture of chemicals by distributing the components between two phases.

Compound: A substance made up of two or more types of atoms chemically combined together.

Crystallisation: A separation technique used to produce solid crystals from a solution by evaporating the solvent.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound.

Electron: Negatively charged subatomic particle which orbit the nucleus at various energy levels. Very small relative mass (negligible).

Electron shell: Different energy levels in atoms occupied by electrons.

Element: A substance made up of only one type of atom.

Filtration: A separation technique used to separate solids from liquids.

Fractional distillation: A method of separating a mixture of substances according to their different boiling points.

Group (periodic table): The columns of the periodic table represent different groups of elements. Elements with similar properties are in the same group.

Halogens: The elements in Group 7 of the periodic table.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

Ion: An atom or molecule with an electric charge due to the loss or gain of electrons.

Isotope: Atoms of the same element with the same number of protons but a different number of neutrons.

Mass number: The total number of protons and neutrons in the nucleus.

Metals: Elements that react to form positive ions. Found to the left and towards the bottom of the periodic table.

Mixture: A mixture consists of two or more elements or compounds not chemically combined together.

Neutron: Neutral subatomic particle present in the nucleus of the atom. Relative mass of 1.

Noble gases: The elements in Group 0 of the periodic table.

Non-metals: Elements that react to form negative ions. Found towards the right and top of the periodic table.

Nuclear model: The nuclear atomic model stated that the mass was concentrated at the centre of the atom and that the nucleus was charged.

Periodic table: Table of elements arranged in order of atomic number and such that elements with similar properties are in the same column (group).

Plum pudding model: Atomic model devised after the discovery of the electron. The model suggests the atom is a ball of positive charge with negative electrons scattered through it.

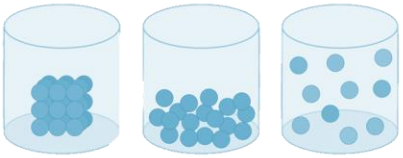
Proton: Positively charged subatomic particle present in the nucleus of the atom. Relative mass of 1.

Relative atomic mass: An average value that takes account of the abundance of the isotopes of the element.

Simple distillation: A procedure by which two liquids with different boiling points can be separated.

Transition metals: The collection of metallic elements in the middle of the periodic table.

TOPIC 2: BONDING



***Coarse particles:** Coarse particles (PM10) have diameters between 1 x 10-5 m and 2.5 x 10-6m. They are often referred to as dust.

Conductor: A material which contains charged particles which are free to move to carry electrical or thermal energy.

Covalent bond: A shared pair of electrons between two non-metals.

Diamond: A giant covalent structure which is made up of carbon atoms each of which form four covalent bonds with four other carbon atoms.

Electrostatic forces: The strong forces of attraction between oppositely charged ions.

Empirical formula: The smallest whole number ratio of atoms of each element in a compound.

***Fine particles:** Fine particles (PM2.5) have diameters between 100 and 2500 nm (1 x 10-7 m and 2.5 x 10-6 m).

Fullerenes: Fullerenes are molecules of carbon atoms with hollow shapes. The structures are based on hexagonal rings of carbon atoms but they may also contain rings with five or seven carbon atoms.

Gas: The state of matter where the particles have the most energy. The particles in a gas are relatively spread out and move randomly in all directions.

Graphene: A single layer of graphite with properties that make it useful in electronics and composites.

Graphite: A giant covalent structure which is made up of carbon atoms each of which form three covalent bonds with three other carbon atoms, forming layers of hexagonal rings which have no covalent bonds between the layers.

Ion: An atom or molecule with an electric charge due to the loss or gain of electrons.

Ionic bond: A metal atom loses electron(s) to form a positively charged ion and a non-metal gains these electron(s) to form a negatively charged ion. An ionic bond is formed between the oppositely charged ions.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

Ionic compound: Chemical compound formed of ions, held together by strong electrostatic forces.

Intermolecular forces: The forces which exist between molecules. The strength of the intermolecular forces impact physical properties like boiling/melting point.

Lattice: A repeating regular arrangement of atoms/ions/molecules. This arrangement occurs in crystal structures.

Liquid: The state of matter where the particles are arranged randomly and close together and are able to move past each other.

Metallic bond: The bonds present in metals between the positive metal ions and negatively charged electrons.

Metals: Elements that react to form positive ions. Found to the left and towards the bottom of the periodic table.

Molecular formula: The actual ratio of atoms of each element present in a compound.

***Nanoparticles:** Nanoparticles have diameters between 1 nm to 100 nm in size. Nanoparticles can exhibit properties different to those for the same material in bulk.

***Nanoscience:** Nanoscience refers to structures that are 1–100 nm in size, of the order of a few hundred atoms.

Non-metals: Elements that react to form negative ions. Found towards the right and top of the periodic table.

Particle theory: The theory which models the three states of matter by representing the particles as small solid spheres. Particle theory can help to explain melting, boiling, freezing and condensing.

Polymers: Large long-chain molecules made up of lots of small monomers joined together by covalent bonds.

Repeat unit: The part of a polymer whose repetition would produce the complete polymer chain.

Solid: The state of matter where the particles hold a regular arrangement and have the least amount of energy.

State symbols: The symbols used in chemical equations to denote the states of the chemicals reacting: (s) - solid, (l) - liquid, (g) - gas, (aq) - aqueous solution

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

TOPIC 3: QUANTITATIVE CHEMISTRY

***Actual yield:** The amount of product actually produced by a reaction.

***Atom economy:** The measure of the amount of starting materials that end up as useful products.

Avogadro constant: The number of atoms, molecules or ions in a mole of a given substance.

***Avogadro's law: Equal amounts in moles of gases occupy the same volume under the same conditions of temperature and pressure.**

Concentration: The amount of substance (e.g. the mass) in a certain volume of a solution.

Conservation of mass: The law of conservation of mass states that no atoms are lost or made during a chemical reaction so the mass of the products equals the mass of the reactants.

Limiting reactant: The reactant that is completely used up since it limits the amount of products formed.

***Mole: Chemical amounts are measured in moles. The mole is the unit for amount of substance. The symbol for the unit mole is mol.**

***Percentage by mass**: A value representing the concentration of an element in a compound or a component in a mixture. It is calculated by the mass of a component divided by the total mass of the mixture, multiplied by 100.

***Percentage yield**: The percentage ratio of the actual yield of product from a reaction compared with the theoretical yield.

Relative formula mass: The sum of the relative atomic masses of the atoms in the numbers shown in the formula. It is numerically equal to the mass of one mole of a substance in grams.

***Theoretical yield:** The maximum amount of product that could be produced from the given reactants, assuming a complete reaction takes place.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

Thermal decomposition: The reaction that occurs when heat is applied to a compound causing it to break down into its different chemical constituents.

Uncertainty: All measurements have a degree of uncertainty regardless of precision and accuracy. Uncertainty can be due to the limitations of the measuring equipment or due to the skill of the experimenter carrying out the measurements

TOPIC 4: CHEMICAL CHANGES

Acid: Acids produce hydrogen ions (H+) in aqueous solutions. They have a pH range of 0-6.

Alkali: Alkalis produce hydroxide ions (OH-) in aqueous solutions. They have a pH range of 8-14.

Crystallisation: A separation technique used to produce solid crystals from a solution by evaporating the solvent.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound.

Electrolysis: The splitting up of an ionic compound using electricity. The electric current is passed through a substance causing chemical reactions at the electrodes and the decomposition of the materials.

Electrolyte: A solution containing free ions from the molten or dissolved ionic substance. The ions are free to move to carry charge.

Extraction: Extraction techniques are used to separate a desired substance when it is mixed with others.

Filtration: A separation technique used to separate solids from liquids.

Negative electrode (cathode): The electrode where hydrogen is produced if the metal in the electrolyte is more reactive than hydrogen. **It is where positively charged ions gain electrons and so the reactions are reductions.**

Neutralisation: The reaction when an acid and a base react to form water and a salt.

Oxidation: A reaction involving the gain of oxygen. **Oxidation is the loss of electrons**.

pH scale: The pH scale, from 0 to 14, is a measure of the acidity or alkalinity of a solution, and can be measured using universal indicator or a pH probe.

Positive electrode (anode): The electrode where oxygen is produced unless the solution contains halide ions then the halogen is produced**. It is where negatively charged ions lose electrons and so the reactions are oxidations.**

***Redox reaction:** A reaction in which both oxidation and reduction occur simultaneously.

Reduction: A reaction involving the loss of oxygen. **Reduction is the gain of electrons**.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

Reduction with carbon: Metals less reactive than carbon can be extracted from their oxides by reduction with carbon.

Strong acid: A strong acid is completely ionised in aqueous solution. Examples of strong acids are hydrochloric, nitric and sulfuric acids.

The reactivity series: Metals are arranged in order of their reactivity in a reactivity series. This can be used to predict products from reactions.

***Titration**: A technique used where a solution of known concentration is used to determine the concentration of an unknown solution.

Universal indicator: A mixture of dyes that changes colour gradually over a range of pH and is used in testing for acids and alkalis.

Weak acid: A weak acid is only partially ionised in aqueous solution. Examples of weak acids are ethanoic, citric and carbonic acids.

TOPIC 5: ENERGY CHANGES

Activation energy: The minimum amount of energy for particles to collide with in order for a successful reaction to occur.

***Alkaline batteries:** Alkaline batteries are non-rechargeable. In non-rechargeable cells and batteries the chemical reactions stop when one of the reactants has been used up.

***Battery**: Batteries consist of two or more cells connected together in series to provide a greater voltage.

***Chemical cells:** Cells contain chemicals which react to produce electricity

Endothermic reaction: An endothermic reaction is one that takes in energy from the surroundings so the temperature of the surroundings decreases. **In an endothermic reaction, the energy needed to break existing bonds is greater than the energy released from forming new bonds.**

Exothermic reaction: An exothermic reaction is one that transfers energy to the surroundings so the temperature of the surroundings increases. **In an exothermic reaction, the energy released from forming new bonds is greater than the energy needed to break existing bonds.**

***Fuel cells**: Fuel cells are supplied by an external source of fuel (eg hydrogen) and oxygen or air. The fuel is oxidised electrochemically within the fuel cell to produce a potential difference

Overall energy change of the reaction: The difference between the sum of the energy needed to break bonds in the reactants and the sum of the energy released when bonds in the products are formed.

Reaction profile: Reaction profiles can be used to show the relative energies of reactants and products, the activation energy and the overall energy change of a reaction.

***Rechargeable cells:** Rechargeable cells and batteries can be recharged because the chemical reactions are reversed when an external electrical current is supplied.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

PAPER 2
TOPIC 6: RATES OF REACTION

Activation energy: The minimum amount of energy that particles must collide with to react.

Catalyst: Catalysts increase the rate of reaction by providing a different pathway for the reaction that has a lower activation energy. They are not used up during the reaction.

Collision theory: According to this theory, chemical reactions can occur only when reacting particles collide with each other and with sufficient energy.

Effect of changing concentration on equilibrium: If the concentration of a reactant is increased, more products will be formed until equilibrium is reached again. If the concentration of a product is decreased, more reactants will react until equilibrium is reached again.

Effect of changing pressure on equilibrium: An increase in pressure causes the equilibrium position to shift towards the side with the smaller number of molecules. A decrease in pressure causes the equilibrium position to shift towards the side with the larger number of molecules.

Effect of changing temperature on equilibrium: If the temperature of an equilibrium system is increased then the relative amount of products at equilibrium increases for an endothermic reaction and decreases for an exothermic reaction.

Effect of concentration on reaction rate: Increasing the concentration of reactants in solution means the reacting particles will be closer together. This means they will collide more often so there will be a higher rate of successful collisions and a faster rate of reaction.

Effect of pressure on reaction rate: Increasing the pressure of gaseous reactants means the reacting particles will be closer together. This means they will collide more often so there will be a higher rate of successful collisions and a faster rate of reaction.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

Effect of surface area on reaction rate: Increasing the surface area of the reactants means there are more exposed reacting particles. This means there are more frequent successful collisions so the rate of reaction increases.

Effect of temperature on reaction rate: Increasing the temperature means the particles will have more kinetic energy and so will move faster. If the molecules are moving faster they will collide more often and, since they've gained kinetic energy, a larger proportion of the particles will have at least the activation energy. For both these reasons the rate of reaction increases.

Equilibrium: When a reversible reaction occurs in apparatus which prevents the escape of reactants and products, equilibrium is reached when the forward and reverse reactions occur at exactly the same rate.

Le Chatelier's Principle: If a reaction at equilibrium is subjected to a change in concentration, temperature or pressure, the position of equilibrium will move to counteract the change.

Rate of reaction: The measure of the amount of product formed or reactant used over time. The units of rate of reaction may be given as g/s, cm3/s or mol/s.

Reversible reaction: Reactions in which the products from the reaction can react together to form the original reactants. The direction of reversible reactions can be changed by changing the conditions.

TOPIC 7: ORGANIC CHEMISTRY

***Addition polymerisation**: A reaction where many small molecules (monomers) join together to form very large molecules (polymers).

Alcohols: Alcohols contain the functional group –OH. The first four members of a homologous series of alcohols are methanol, ethanol, propanol and butanol.

Alkanes: Alkanes are the most common hydrocarbon found in crude oil. Alkanes have the general formula CnH2n+2.

Alkenes: Alkenes are hydrocarbons with a double bond between two of the carbon atoms in their chain, causing them to be unsaturated. They have the general formula CnH2n.

***Amino acids: Amino acids have two different functional groups in a molecule. They react by condensation polymerisation to produce polypeptides**.

Carboxylic acids: Carboxylic acids have the functional group –COOH. The first four members of a homologous series of carboxylic acids are methanoic acid, ethanoic acid, propanoic acid and butanoic acid.

Catalytic cracking: Long-chain hydrocarbons are heated to turn them into a gas. The vapour is then passed over a hot powdered aluminium oxide catalyst. The long chain molecules split apart on the surface of the catalyst.

Combustion: Combustion of hydrocarbon fuels releases energy. During combustion, the carbon and hydrogen in the fuels are oxidised.

Complete combustion: Water and carbon dioxide are the only products of the complete combustion of a hydrocarbon.

Crude oil: A finite resource found in rocks. It is the remains of an ancient biomass consisting mainly of plankton that was buried in mud. Most of the compounds in crude oil are hydrocarbons.

***Condensation polymerisation**: **These reactions involve monomers with two functional groups. When these monomers react they join together and lose small molecules such as water.**

Cracking: A process that involves breaking down larger hydrocarbons to produce smaller more useful molecules. Cracking can be done by catalytic cracking or steam cracking.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

***DNA:** DNA encodes genetic instructions for the development and functioning of living organisms and viruses. Most DNA molecules are two polymer chains, made from four different nucleotides, in the form of a double helix.

Esters: The product of a condensation reaction between a carboxylic acid and alcohol. For example: ethanol + ethanoic acid → ethyl ethanoate.

Fermentation: A chemical process by which molecules such as glucose are broken down anaerobically. Ethanol is produced when sugar solutions are fermented using yeast.

Fractional distillation: A method of separating a mixture of substances according to their different boiling points. Commonly used to separate crude oil into different fractions.

Homologous series: A series of compounds with the same functional group and similar chemical properties.

Hydrocarbons: Molecules that are made up of hydrogen and carbon atoms only.

***Nucleotides**: The monomers which make up DNA.

***Polyesters: A category of polymers which contain the ester functional group in their main chain. Formed from condensation polymerisation.**

Polymers: Large long-chain molecules made up of lots of small monomers joined together by covalent bonds.

Polypeptide: A chain of amino acids.

***Repeat unit**: The part of a polymer whose repetition would produce the complete polymer chain.

Steam cracking: Long-chain hydrocarbons are heated to turn them into a gas. The hydrocarbon vapour is then mixed with steam and heated to a very high temperature which caused them to split into smaller molecules.

TOPIC 8: CHEMICAL ANALYSIS

Chromatogram: A graph that shows the result of separating the components of a mixture by chromatography.

Chromatography: A technique used to separate mixtures due to the distribution of the substances between the stationary and mobile phase. It can give information to help identify substances.

***Flame emission spectroscopy:** An instrumental method used to analyse metal ions in solutions.

***Flame test:** Qualitative test used to identify metal ions (cations). Carried out by inserting a nichrome wire loop with the unknown compound on into a flame and observing the colour.

Formulation: A mixture that has been designed as a useful product. They are made by mixing the components in carefully measured quantities to ensure that the product has the required properties.

Impure substance: A substance made up of two or more elements or compounds that are not bonded together chemically.

***Instrumental methods**: Instrumental methods can be used to detect and identify elements and compounds. They are accurate, sensitive and rapid.

Litmus paper: Paper stained with litmus which can be used to indicate the acidity or alkalinity of a substance. Used in the test for chlorine.

Mobile phase: Where the molecules can move during chromatography. It is always a liquid or gas.

Precipitation: The creation of a solid from a solution.

Pure substance: In chemistry a pure substance is a single element or compound, not mixed with any other substance. In everyday language, a pure substance can mean a substance that has had nothing added to it, so it is unadulterated and in its natural state.

Rf value: The ratio of the distance moved by a compound to the distance moved by the solvent.

Stationary phase: Where the molecules are stationary during chromatography. It is a solid or a liquid supported on a solid.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

TOPIC 9: CHEMISTRY OF THE ATMOSPHERE

Acid rain: Rain that is acidic due to dissolved gases, such as sulfur dioxide, produced from the burning of fossil fuels.

Carbon footprint: The total amount of carbon dioxide and other greenhouse gases emitted over the full life cycle of a product.

Environmental implication: The effect that the activity has on the environment.

Fossil fuels: Natural fuels such as coal and gas, formed in the past from the remains of living organisms.

Global climate change: A long-term shift in global climate patterns.

Global dimming: A gradual reduction in the amount of light reaching the Earth's surface. This can be caused by carbon particulates.

Greenhouse effect: The increase in the temperature of the Earth's atmosphere due to the greenhouse gases in the atmosphere trapping infra-red radiation from the surface.

Greenhouse gases: Greenhouse gases include water vapour, carbon dioxide and methane. Greenhouse gases in the atmosphere maintain temperatures on Earth high enough to support life.

Particulates: Particulates cause global dimming and health problems for humans. Carbon particulates (soot) are a product of incomplete combustion.

Photosynthesis: Oxygen was produced in the early atmosphere by photosynthesis of plants and algae. This simultaneously decreased the amount of carbon dioxide in the early atmosphere. Equation for photosynthesis: $6CO_2 + 6H_2O \rightarrow C_6H_{12}O_6 + 6O_2$

Pollutants: A substance introduced into the environment that has undesired effects.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

TOPIC 10: ENERGY CHANGES

***Alloy:** A metal compound made by combining two or more metals together. This process is carried out to give greater strength or resistance to corrosion.

Bioleaching: Bioleaching uses bacteria to produce leachate solutions that contain metal compounds.

***Borosilicate glass:** Glass made from sand and boron trioxide. It melts at higher temperatures than soda-lime glass.

***Composite:** Most composites are made of two materials, a matrix or binder surrounding and binding together fibres or fragments of the other material, which is called the reinforcement.

***Corrosion**: Corrosion is the destruction of materials by chemical reactions with substances in the environment, e.g. rusting.

Desalination: The process of removing salt from seawater.

Displacement: A chemical reaction in which a more reactive element displaces a less reactive element from its compound.

Electrolysis: The splitting up of an ionic compound using electricity. The electric current is passed through a substance causing chemical reactions at the electrodes and the decomposition of the materials.

***Electroplating**: Electroplating is the process of coating a metal with a thin layer of another metal by electrolysis to improve the metal's corrosion resistance.

Finite resources: A non-renewable resource that cannot be readily replaced by natural means at a quick enough pace to keep up with consumption.

***Galvanise**: A process used to protect against corrosion by coating the metal with a protective layer of zinc.

Ground water: Water held underground in the soil and crevices in rock.

Life cycle assessment (LCA): Life cycle assessments are carried out to assess the environmental impact of products in each of these stages: extracting and processing raw materials, manufacturing and packaging, use and operation during its lifetime, disposal at the end of its useful life.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY

***NPK fertilisers**: Fertilisers which contain compounds of nitrogen, phosphorus and potassium. The fertilisers improve agricultural productivity.

Ore: A rock from which metal can be extracted.

Phytomining: Phytomining uses plants to absorb metal compounds from the soil. The plants are harvested and then burned to produce ash that contains the metal compounds.

Potable water: Water that is safe to drink.

Raw materials: The basic material from which a product is made.

Renewable resources: A natural resource which can be used repeatedly and will not run out due to being naturally replenished.

***Sacrificial protection:** The protection of iron or steel against corrosion by using a more reactive metal. Zinc is often used as a sacrificial metal.

***Soda-lime glass**: Glass made by heating a mixture of sand, sodium carbonate and limestone.

Sterilisation: The process used to remove bacteria or living microorganisms from something. Used during the treatment of water.

Sustainable development: Development that meets the needs of current generations without compromising the ability of future generations to meet their own needs.

***The Haber process:** The process used to manufacture ammonia from hydrogen and nitrogen gas.

Thermosetting polymers: Polymers which do not melt when heated.

Thermosoftening polymers: Polymers which melt when heated and can be remoulded into different shapes.

AQA GCSE Science Command Words

These command words tell you what to you need to do when you are doing exam questions.

Balance	Students need to balance a chemical equation.
Calculate	Students should use numbers given in the question to work out the answer.
Choose	Select from a range of alternatives.
Compare	This requires the student to describe the similarities and/or differences betweenthings, not just write about one.
Complete	Answers should be written in the space provided, for example, on a diagram, inspaces in a sentence or in a table.
Define	Specify the meaning of something.
Describe	Students may be asked to recall some facts, events or process in an accurateway.
Design	Set out how something will be done.
Determine	Use given data or information to obtain and answer.
Draw	To produce, or add to, a diagram.
Estimate	Assign an approximate value.
Evaluate	Students should use the information supplied, as well as their knowledge and understanding, to consider evidence for and against when making a judgement.
Explain	Students should make something clear, or state the reasons for somethinghappening.
Give	Only a short answer is required, not an explanation or a description.
Identify	Name or otherwise characterise.
Justify	Use evidence from the information supplied to support an answer.
Label	Provide appropriate names on a diagram.
Measure	Find an item of data for a given quantity.
Name	Only a short answer is required, not an explanation or a description. Often it canbe answered with a single word, phrase or sentence.
Plan	Write a method.
Plot	Mark on a graph using data given.
Predict	Give a plausible outcome.
Show	Provide structured evidence to reach a conclusion.
Sketch	Draw approximately.
Suggest	This term is used in questions where students need to apply their knowledgeand understanding to a new situation.
Use	The answer must be based on the information given in the question. Unless theinformation given in the question is used, no marks can be given. In some cases students might be asked to use their own knowledge and understanding.
Write	Only a short answer is required, not an explanation or a description.

DEFINITIONS IN BOLD ARE FOR HIGHER TIER ONLY

DEFINITIONS MARKED BY '*' ARE FOR SEPARATE SCIENCES ONLY